



CALS TEST NETWORK

# AFCTN Test Report 94-003

AFCTB-ID  
93-006



## Technical CGM Transfer

Using:



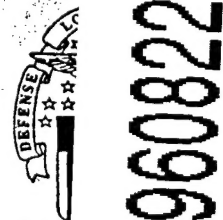
Texas Instruments' Data



MIL-D-28003 (CGM)

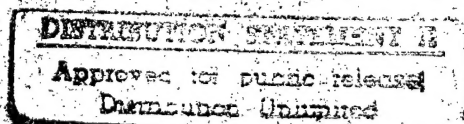


Quick Short Test Report



19960822 117

08 February 1993



Prepared for  
Electronic Systems Center

DTIC QUALITY INSPECTED 3



**AFCTN Test Report**  
94-003

**AFCTB-ID**  
93-006

---

**Technical CGM Transfer**  
**Using:**  
**Texas Instruments' Data**

**MIL-D-28003 (CGM)**

**Quick Short Test Report**

**8 February 1993**

---

**Prepared By**  
Air Force CALS Test Bed  
Wright-Patterson AFB, OH 45433

**AFCTB Contact**  
Gary Lammers  
(513) 427-2295

**AFCTN Contact**  
Mel Lammers  
(513) 427-2295

**DTIC QUALITY INSPECTED 3**

## DISCLAIMER

This document was prepared as an account of work sponsored by the Air Force. Neither the United States Government, the Air Force, nor any of their employees makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, nor represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the Air Force. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the Air Force, and shall not be used for advertising or product endorsement purposes.

Available to the public from the  
National Technical Information Service  
U.S. Department of Commerce  
5285 Port Royal Road  
Springfield, VA 22161

This report and those involved in its preparation do not endorse any product, process, or company stated herein. Use of these means by anyone does not imply certification by the Air Force CALS Test Network (AFCTN).

---

---

## Contents

1.	Introduction.....	1
1.1.	Background.....	1
1.2.	Purpose.....	2
2.	Test Parameters.....	3
3.	1840A Analysis.....	5
3.1.	External Packaging.....	5
3.2.	Transmission Envelope.....	5
3.2.1.	Tape Formats.....	5
3.2.2.	Declaration and Header Fields.....	5
4.	IGES Analysis.....	5
5.	SGML Analysis.....	6
6.	Raster Analysis.....	6
7.	CGM Analysis.....	6
8.	Conclusions and Recommendations.....	8
9.	Appendix A - Detailed CGM Analysis.....	9
9.1.	File TI01.....	9
9.1.1.	Parser Log MetaCheck.....	9
9.1.2.	validcgm Log.....	11
9.1.3.	Output Charisma.....	13
9.1.4.	Output cgm2draw/IslandDraw.....	14
9.1.5.	Output Harvard Graphics.....	15
9.1.6.	HiJaak for Windows.....	16
9.1.7.	Output IslandDraw.....	17

---

9.2.	File TI02.....	18
9.2.1.	Parser Log MetaCheck.....	18
9.2.2.	validcgm Log.....	20
9.2.3.	Output Charisma.....	22
9.2.4.	Output cgm2draw/IslandDraw.....	23
9.2.5.	Output Harvard Graphics.....	24
9.2.6.	HiJaak for Windows.....	25
9.2.7.	Output IslandDraw.....	26
9.3.	Files TI01 & TI02.....	27
9.3.1.	Output Ventura Publisher.....	27

## **1. Introduction**

### **1.1 Background**

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

---

## 1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Texas Instruments' interpretation and use of the CALS standards in transferring Computer Graphics Metafile (CGM) data. Texas Instruments used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 3.5" disk. The stated goal of the test was to evaluate the CGM files and not the CALS headers.

## 2. Test Parameters

**Test Plan:** AFCTB 93-006

**Date of Evaluation:** 3 January 1993

**Evaluator:** George Elwood  
Air Force CALS Test Bed  
DET 2 HQ ESC/ENCP  
4027 Colonel Glenn Hwy  
Suite 300  
Dayton, OH 45431-1672

**Data Originator:** Michael Hurn  
Texas Instruments  
6500 Chase Oaks Blvd.  
P.O. Box 869305  
Plano, TX 75086

**Data Description:** CGM Transfer Test  
2 CGM files

**Data Source System:** CGM

**HARDWARE** Unknown

**SOFTWARE** Micrografx Charisma v2.1



**Evaluation Tools Used:**

**MIL-D-28003 (CGM)**

SUN SparcStation 2

ArborText *cgm2draw*

Island Graphics *IslandDraw v3.0*

AFCTN *validcgm*

Cheetah Gold 486

Software Publishing Corporation

(SPC) *Harvard Graphics v3.05*

Inset Systems *HiJaak v2.1*

Inset Systems *HiJaak v1.0 Windows*

Micrografx *Charisma v2.1*

Corel Ventura Publisher

**Standards**

**Tested:**

MIL-D-28003

### **3. 1840A Analysis**

#### **3.1 External Packaging**

The 3.5" disk arrived at the Air Force CALS Test Bed (AFCTB) enclosed in an overnight express envelope. The exterior of the envelope was not marked with the magnetic media warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The 3.5" disk was not enclosed in a barrier bag or barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. Enclosed in the box was a packing list showing all files recorded on the 3.5" disk.

#### **3.2 Transmission Envelope**

The 3.5" disk received by the Air Force CALS Test Bed did not contain MIL-STD-1840A files. The files were not named per the standard conventions. The purpose of this test was to evaluate only the files.

##### **3.2.1 Tape Formats**

Data was delivered on a 3.5" disk.

##### **3.2.2 Declaration and Header Fields**

No Document Declaration file or data file headers were included on the 3.5" disk.

### **4. IGES Analysis**

No Initial Graphics Exchange Specification (IGES) files were included on the 3.5" disk.

## 5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on the 3.5" disk.

## 6. Raster Analysis

No Raster files were included on the 3.5" disk.

## 7. CGM Analysis

The 3.5" disk contained two CGM files. Both files were evaluated using a software available within the AFCTB with CALS options. This utility reported that both files had CALS errors. The reported error is an invalid transparency indicator. This error was reported in both files.

Error 6515: Element Class/ID: 3/4 Offset: 4394 octets Element No. 356  
The Transparency Indicator is invalid; it must be 1 (on).

The files were also evaluated using the AFCTN *validcgm* utility. This program reported the same errors.

The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are a good indicator of usability. The use of these products is not an endorsement.

The files were converted using ArborText's *cgm2draw* utility. No errors were reported during the conversion process. The resulting files were read into Island Graphics' *IslandDraw*. When the images were displayed on the screen, the text at the top was very large and flowed off screen to the right. On file TI01, the circles from bombs on the front view were displayed on the bottom view of the aircraft. On file TI02, many entities were misplaced around the drawing. The same text problem was also noted. When both files printed, sev-

eral additional pages were generated with the text flowing across the top of the paper. Hard copies are included in the Appendix to this report.

The files were imported into the Micrografx *Charisma* without a reported error. The images from both files displayed and printed correctly.

The files were imported into SPC's *Harvard Graphics* without a reported error. The images displayed and printed correctly.

The files were imported into Inset System's *HiJaak for Windows* without a reported error. Some minor deviations were noted in both files. These were filled in areas like the bombs in the front view of TI01 and the right engine intake on file TI02.

The files were directly imported into Island Graphics' *IslandDraw* without a reported error. The displayed and printed images appear to be duplicates of the provided files.

The files were imported directly into Corel's *Ventura Publisher* without a reported error. When the files were displayed and printed, the images appeared very small and located in the lower center of the frame. Text in TI01 overflowed the frame area and was over written.

The CGM files sent by Texas Instruments do not meet the CALS MIL-D-28003 specification.

## 8. Conclusions and Recommendations

In summary, the 3.5" disk from Texas Instruments did not meet the MIL-STD-1840A requirement. However, the stated purpose of the test was to evaluate the data files.

Both CGM files were reported as not meeting MIL-D-28003 specification by both the software available in the AFCTB and the AFCTN *validcgm* utility. Both programs reported the same errors.

---

## 9. Appendix A - Detailed CGM Analysis

### 9.1 File TI01

#### 9.1.1 Parser Log

CGM/MIL-D-28003 Conformance Analyzer  
Copyright 1988-91 CGM Technology Software  
Execution Date: 02/03/93 Time: 08:45:44

Metafile Examined : i:\9306\ti01

Pictures Examined : All  
Elements Examined : All  
Bytes Examined : All

===== Trace Report =====

Tracing not selected.

===== CGM Conformance Violation Report =====

No Errors Detected

===== CALS CGM Profile (MIL-D-28003) Report =====

Error 6515: Element Class/ID: 3/4 Offset: 4394 octets Element No. 356  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 8846 octets Element No. 698  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 9502 octets Element No. 747  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 10158 octets Element No. 815  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 14270 octets Element No. 1021  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 19614 octets Element No. 1304  
The Transparency Indicator is invalid; it must be 1 (on).

---

Error 6515: Element Class/ID: 3/4 Offset: 22388 octets Element No. 1472  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 22646 octets Element No. 1485  
The Transparency Indicator is invalid; it must be 1 (on).

===== Conformance Summary Report =====

CGM/MIL-D-28003 Conformance Analyzer  
Copyright 1988-91 CGM Technology Software  
Execution Date: 02/03/93 Time: 08:45:49

Name of CGM under test: i:\9306\ti01.cgm  
Encoding : Binary

Pictures Examined : All  
Elements Examined : All  
Bytes Examined : All

BEGIN METAFILE string : "Micrografx CGM Translator, version 3.9 (T.I.  
Beta)"

METAFILE DESCRIPTION : "MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 128; string contains: "1"

Conformance Summary : This file conforms to the CGM specification.

However, this file does not satisfy  
the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested  
1509 Elements Tested  
23092 Octets Tested

0 Illegal CGM Elements	1000 -	1999
0 Incorrect CGM Element Lengths	2000 -	2999
0 CGM State Errors	3000 -	3499
0 Required CGM Elements Missing or Wrong	4000 -	4499
0 CGM Parameter Values Out of Range	6000 -	6499
0 CGM Structure Errors	7000 -	7499
0 *** CGM Errors Found (total)	***	
0 Profile State Errors	3500 -	3999
0 Illegal Profile Elements	4500 -	4999
8 Profile Parameter Values Out of Range	6500 -	6999

---

0 Profile Data Limits Exceeded	8500 -	8999
0 Other Profile Constraints Violated	9500 -	9999
8 *** Profile Violations Found (total) ***		
0 Warnings (Advisory Remarks)	20000 -	20999

1 distinct errors and warnings were reported.

===== End of Conformance Report =====

## 9.1.2 validcgm Log

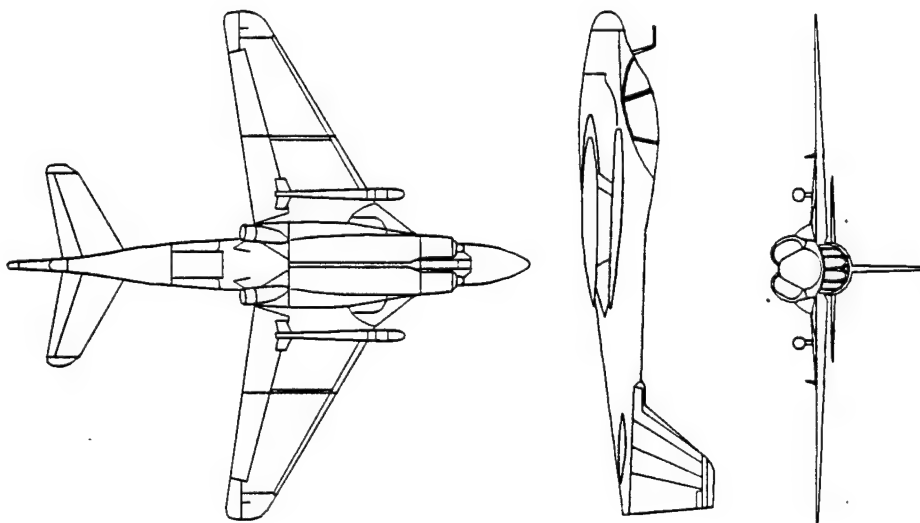
Analysis for file ti01.cgm using table table  
MILSPEC 28003 error: transparency not on  
(356, 4394) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(698, 8846) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(747, 9502) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(815, 10158) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(1021, 14270) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(1304, 19614) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(1472, 22388) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(1485, 22646) (3, 4, 2) Transparency OFF  
(0, 1) occurred 1 time  
(0, 2) occurred 1 time  
(0, 3) occurred 1 time  
(0, 4) occurred 1 time  
(0, 5) occurred 1 time  
(1, 1) occurred 1 time  
(1, 2) occurred 1 time  
(1, 3) occurred 1 time  
(1, 4) occurred 1 time  
(1, 5) occurred 1 time  
(1, 6) occurred 1 time  
(1, 7) occurred 1 time  
(1, 10) occurred 1 time  
(1, 11) occurred 1 time  
(2, 1) occurred 1 time  
(2, 2) occurred 1 time



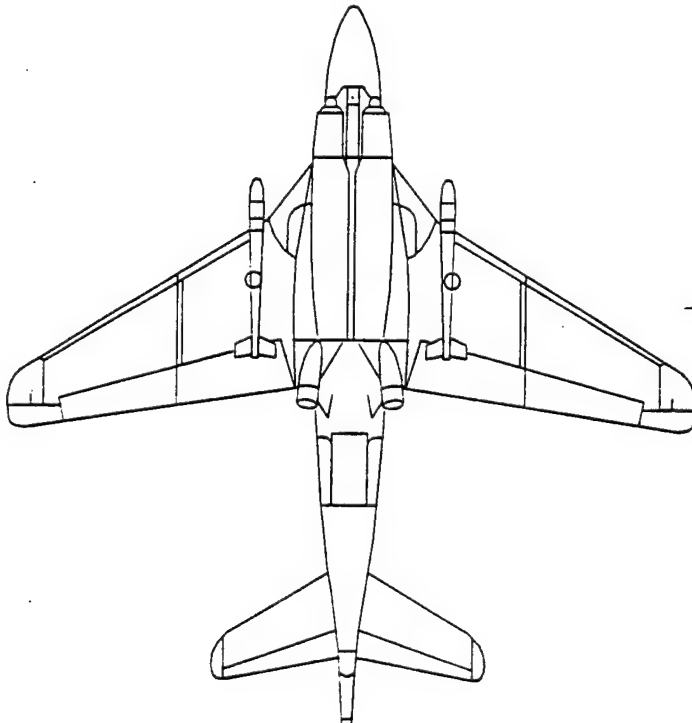
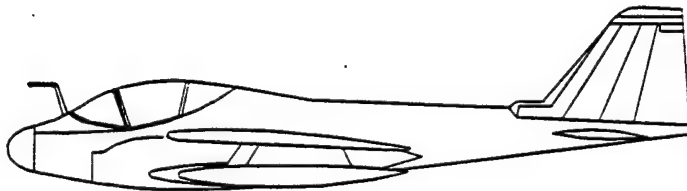
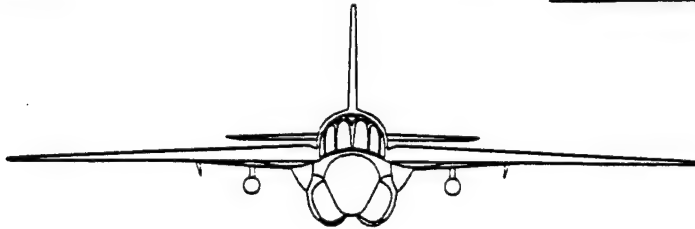
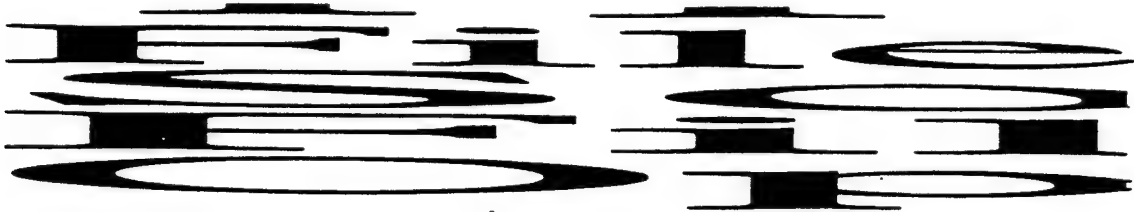
(2, 3) occurred 1 time  
(2, 5) occurred 1 time  
(2, 6) occurred 1 time  
(2, 7) occurred 1 time  
(3, 1) occurred 1 time  
(3, 3) occurred 201 times  
(3, 4) occurred 13 times  
(4, 1) occurred 288 times  
(4, 4) occurred 5 times  
(4, 17) occurred 3 times  
(4, 18) occurred 4 times  
(5, 2) occurred 5 times  
(5, 3) occurred 397 times  
(5, 4) occurred 1 time  
(5, 14) occurred 1 time  
(5, 15) occurred 1 time  
(5, 16) occurred 5 times  
(5, 18) occurred 1 time  
(5, 22) occurred 2 times  
(5, 23) occurred 148 times  
(5, 27) occurred 1 time  
(5, 28) occurred 397 times  
(5, 29) occurred 1 time  
(5, 30) occurred 14 times

### 9.1.3 Output Charisma

TI CGM Translation Test File #1  
File Name: TICGM0001.CGM  
Source: Micrografx CHARISMA ver2.1  
Filter: CGMTI.TRS ver 3.9 Beta 1  
Options: CALS export selected

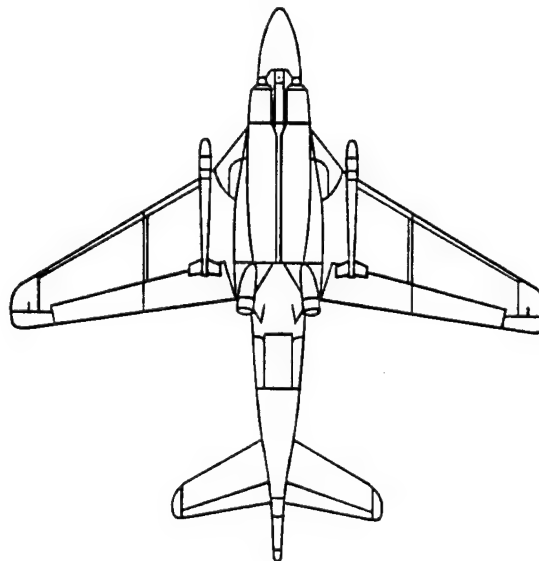


#### 9.1.4 Output cgm2draw/IslandDraw



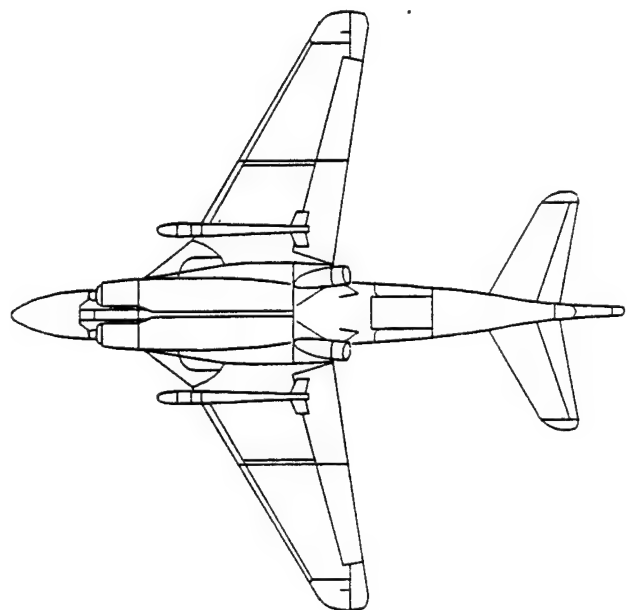
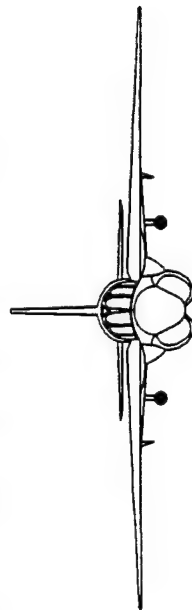
### 9.1.5 Output Harvard Graphics

TI CGM Translation Test File #1  
File Name: TICGM0001.CGM  
Source: Micrografx CHARISMA ver2.1  
Filter: CGMTI.TRS ver 3.9 Beta 1  
Options: CALS export selected



## 9.1.6 HiJaak for Windows

TI CGM Translation Test File #1  
File Name: TICGM0001.CGM  
Source: Micrografx CHARISMA ver2.1  
Filter: CGMTI.TRS ver 3.9 Beta 1  
Options: CALS export selected



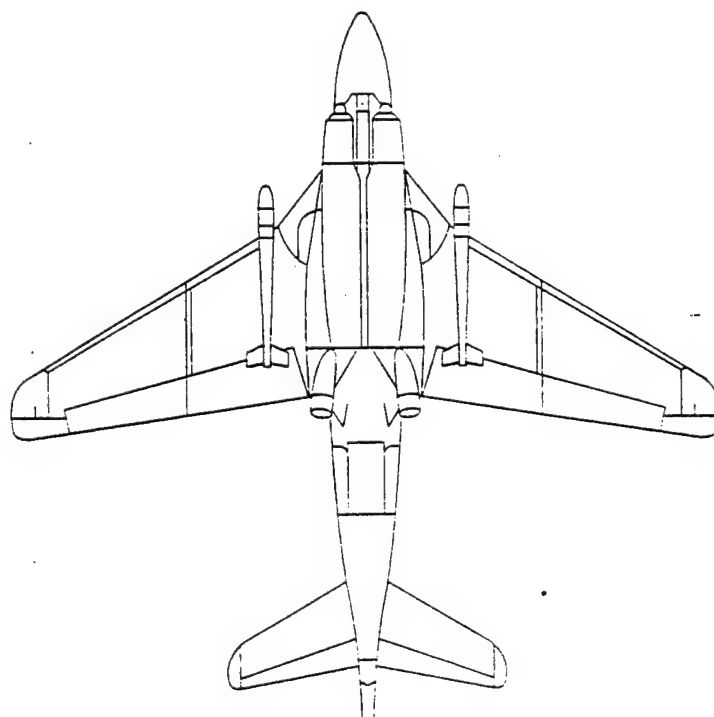
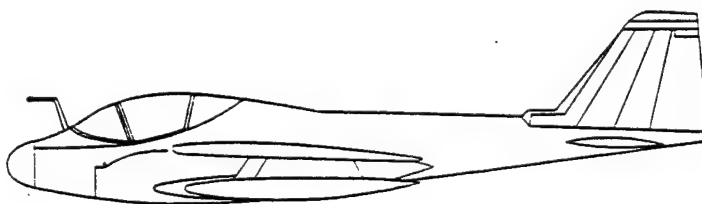
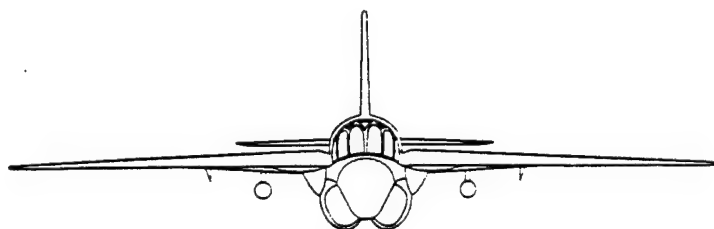
### 9.1.7 Output IslandDraw

File Name: HCGM0001.CGM

Source: Micrografx CHARISMA ver2.1

Iter: CGMTI.TRS ver 3.9 Beta 1

Options: CALS export selected



## 9.2 File TI02

### 9.2.1 Parser Log

CGM/MIL-D-28003 Conformance Analyzer  
Copyright 1988-91 CGM Technology Software  
Execution Date: 02/03/93 Time: 08:45:55

Metafile Examined : i:\9306\ti02

Pictures Examined : All  
Elements Examined : All  
Bytes Examined : All

===== Trace Report =====

Tracing not selected.

===== CGM Conformance Violation Report =====

No Errors Detected

===== CALS CGM Profile (MIL-D-28003) Report =====

Error 6515: Element Class/ID: 3/4 Offset: 2560 octets Element No. 220  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 5942 octets Element No. 500  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 7190 octets Element No. 617  
The Transparency Indicator is invalid; it must be 1 (on).

<<<< PART OF LOG REMOVED HERE >>>>

Error 6515: Element Class/ID: 3/4 Offset: 28304 octets Element No. 1987  
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4 Offset: 29168 octets Element No. 2001  
The Transparency Indicator is invalid; it must be 1 (on).

===== Conformance Summary Report =====

CGM/MIL-D-28003 Conformance Analyzer  
Copyright 1988-91 CGM Technology Software

---

Execution Date: 02/03/93 Time: 08:46:02

Name of CGM under test: i:\9306\ti02.cgm  
Encoding : Binary

Pictures Examined : All  
Elements Examined : All  
Bytes Examined : All

BEGIN METAFILE string : "Micrografx CGM Translator, version 3.9 (T.I.  
Beta)"

METAFILE DESCRIPTION : "MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 128; string contains: "1"

Conformance Summary : This file conforms to the CGM specification.

However, this file does not satisfy  
the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested  
2016 Elements Tested  
29468 Octets Tested

0 Illegal CGM Elements	1000 -	1999
0 Incorrect CGM Element Lengths	2000 -	2999
0 CGM State Errors	3000 -	3499
0 Required CGM Elements Missing or Wrong	4000 -	4499
0 CGM Parameter Values Out of Range	6000 -	6499
0 CGM Structure Errors	7000 -	7499
0 *** CGM Errors Found (total)	***	

0 Profile State Errors	3500 -	3999
0 Illegal Profile Elements	4500 -	4999
36 Profile Parameter Values Out of Range	6500 -	6999
0 Profile Data Limits Exceeded	8500 -	8999
0 Other Profile Constraints Violated	9500 -	9999
36 *** Profile Violations Found (total)	***	

0 Warnings (Advisory Remarks)	20000 -	20999
-------------------------------	---------	-------

1 distinct errors and warnings were reported.

===== End of Conformance Report =====



---

## 9.2.2 validegcm Log

Analysis for file ti02.cgm using table table

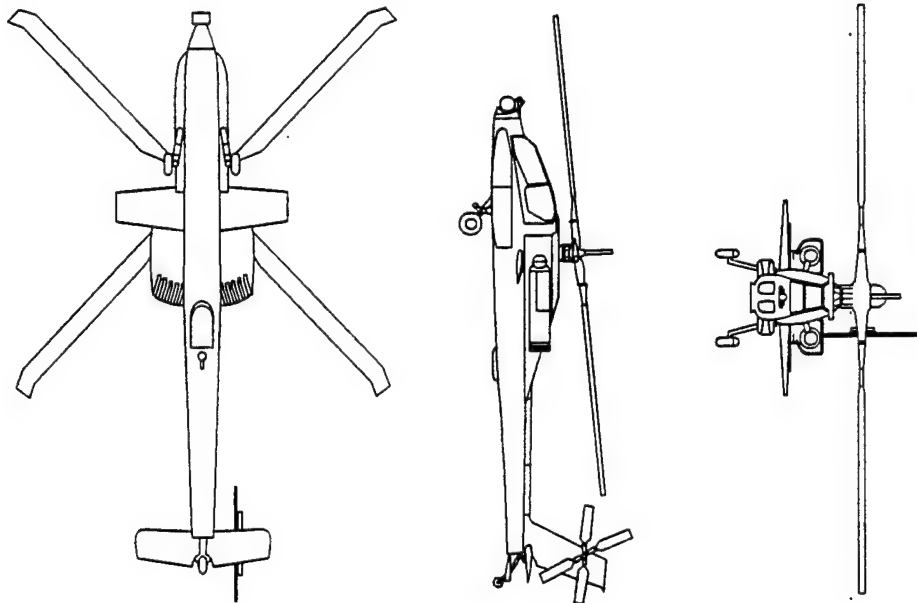
MILSPEC 28003 error: transparency not on  
(220, 2560) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(500, 5942) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(617, 7190) (3, 4, 2) Transparency OFF

<<<<< PART OF LOG REMOVED HERE >>>>>

MILSPEC 28003 error: transparency not on  
(1987, 28304) (3, 4, 2) Transparency OFF  
MILSPEC 28003 error: transparency not on  
(2001, 29168) (3, 4, 2) Transparency OFF  
(0, 1) occurred 1 time  
(0, 2) occurred 1 time  
(0, 3) occurred 1 time  
(0, 4) occurred 1 time  
(0, 5) occurred 1 time  
(1, 1) occurred 1 time  
(1, 2) occurred 1 time  
(1, 3) occurred 1 time  
(1, 4) occurred 1 time  
(1, 5) occurred 1 time  
(1, 6) occurred 1 time  
(1, 7) occurred 1 time  
(1, 10) occurred 1 time  
(1, 11) occurred 1 time  
(2, 1) occurred 1 time  
(2, 2) occurred 1 time  
(2, 3) occurred 1 time  
(2, 5) occurred 1 time  
(2, 6) occurred 1 time  
(2, 7) occurred 1 time  
(3, 1) occurred 1 time  
(3, 3) occurred 286 times  
(3, 4) occurred 45 times  
(4, 1) occurred 360 times  
(4, 4) occurred 5 times  
(4, 7) occurred 19 times  
(4, 11) occurred 9 times  
(4, 17) occurred 9 times  
(4, 18) occurred 2 times  
(5, 2) occurred 9 times

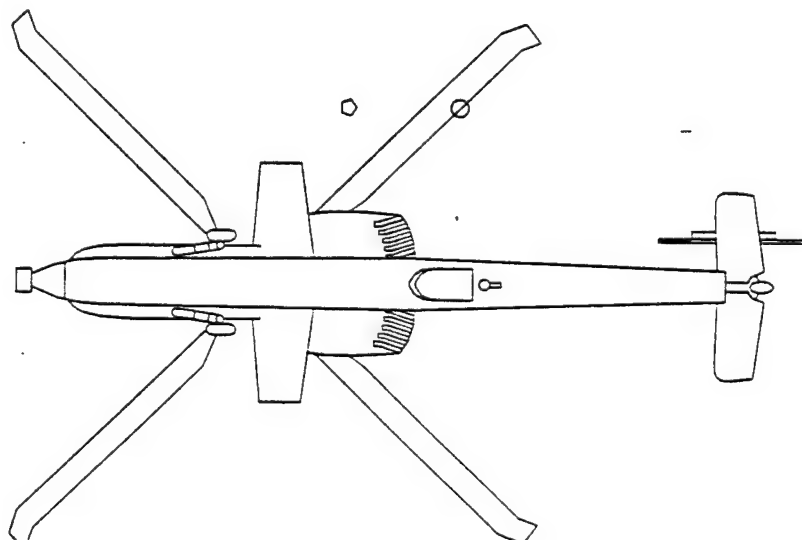
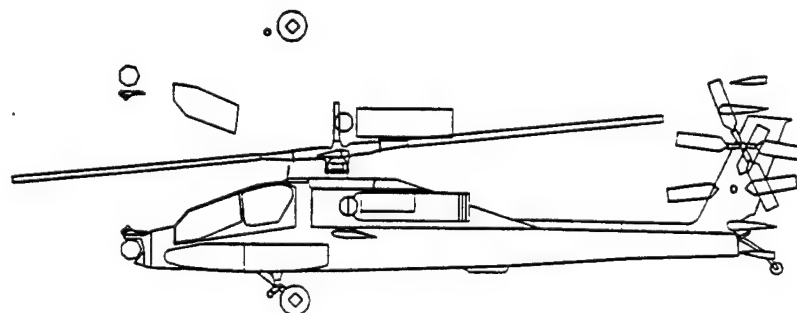
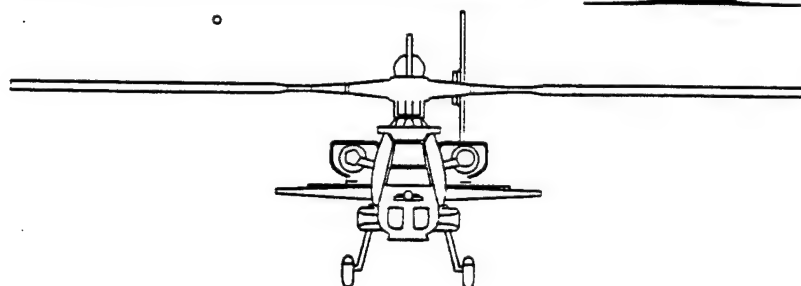
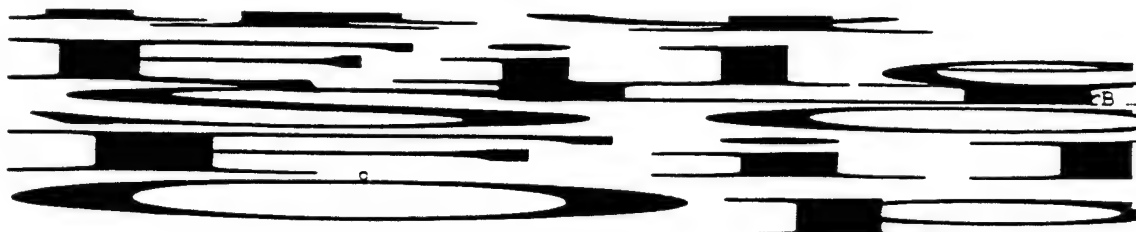
(5, 3) occurred 512 times  
(5, 4) occurred 1 time  
(5, 14) occurred 1 time  
(5, 15) occurred 1 time  
(5, 16) occurred 5 times  
(5, 18) occurred 1 time  
(5, 22) occurred 18 times  
(5, 23) occurred 160 times  
(5, 27) occurred 1 time  
(5, 28) occurred 512 times  
(5, 29) occurred 1 time  
(5, 30) occurred 38 times

### 9.2.3 Output Charisma



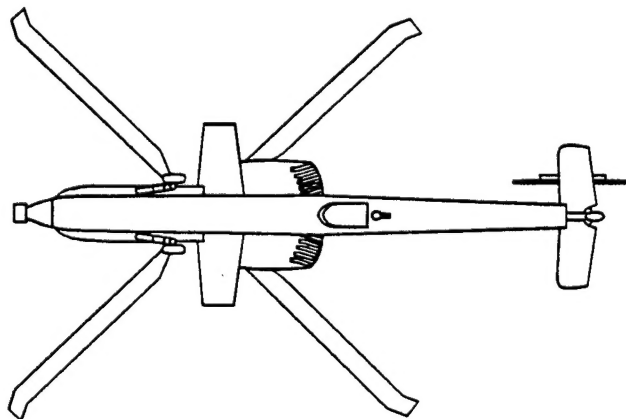
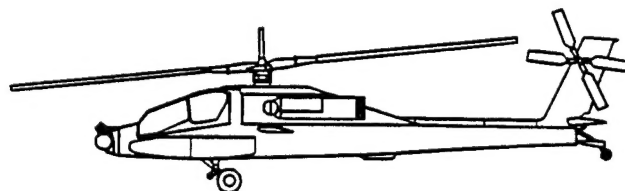
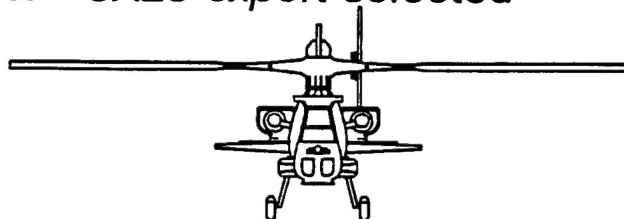
11 CGM Translation Test File #2  
File Name: TICGM0002.CGM  
Source: Micrografx CHARISMA ver2.1  
Filter: CGMTL.TRS ver 3.9 Beta 1  
Options: CALS export selected

#### 9.2.4 Output cgm2draw/IslandDraw



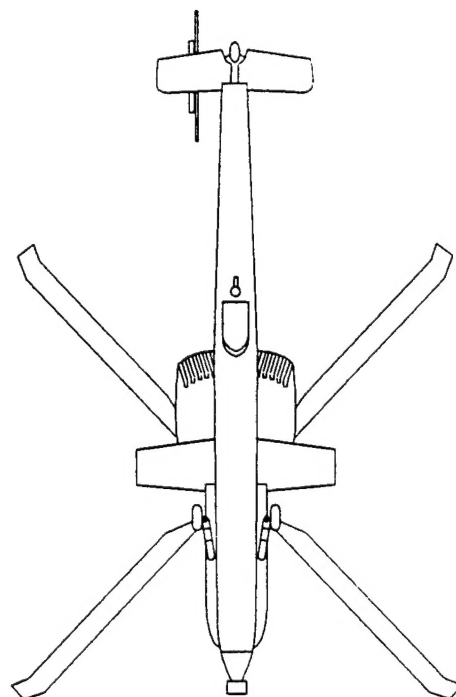
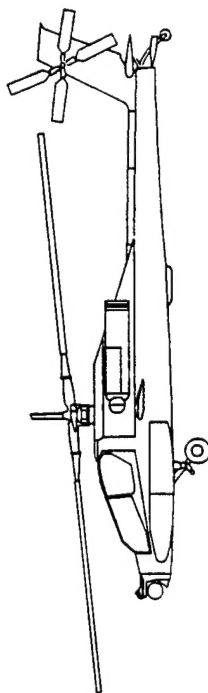
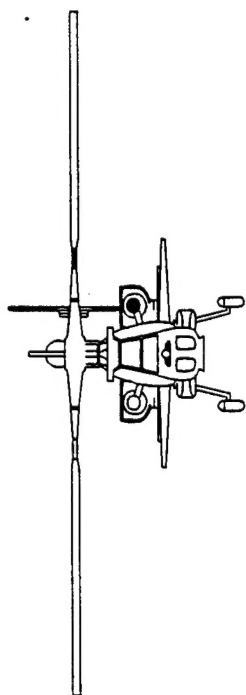
## 9.2.5 Output Harvard Graphics

*TI CGM Translation Test File #2*  
*File Name: TICGM0002.CGM*  
*Source: Micrografx CHARISMA ver2.1*  
*Filter: CGMTI.TRS ver 3.9 Beta 1*  
*Options: CALS export selected*



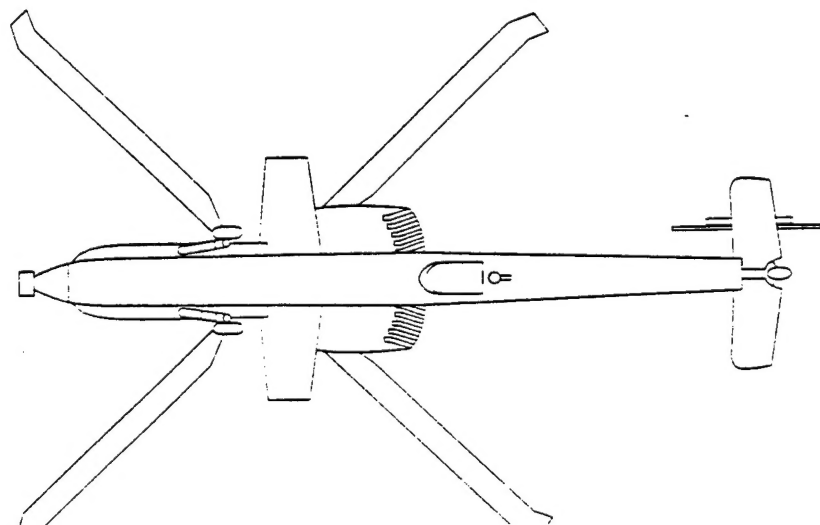
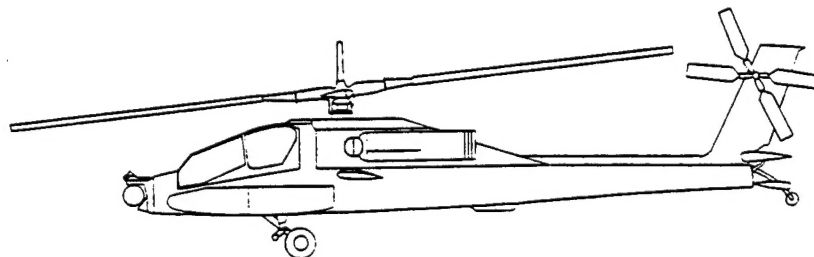
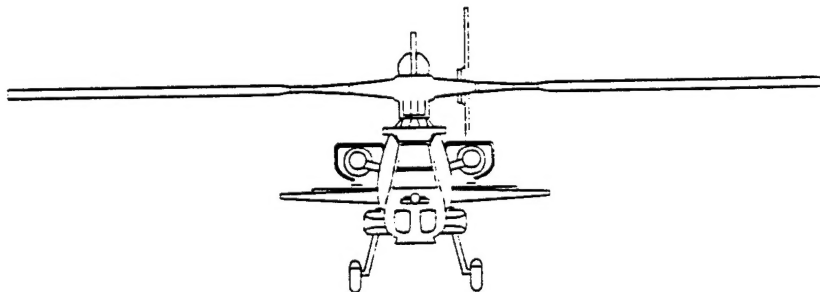
## 9.2.6 HiJaak for Windows

T1 CGM Translation Test File #2  
File Name: TICGM0002.CGM  
Source: Micrografx CHARISMA ver2.1  
Filter: CGMTI.TRS ver 3.9 Beta 1  
Options: CALS export selected

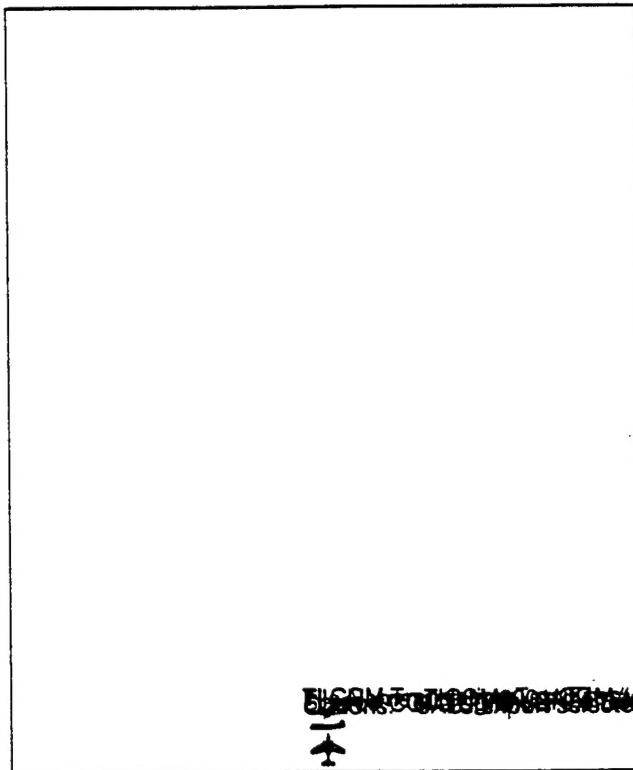


### 9.2.7 Output IslandDraw

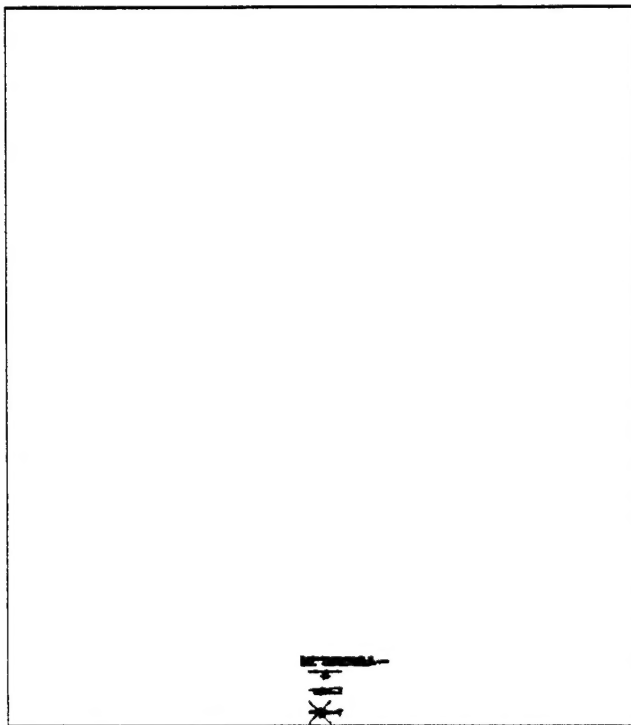
ie name: II.CGIM0002.CGIM  
ource: Micrografx CHARISMA ver2.1  
lter: CGMTI.TRS ver 3.9 Beta 1  
ptions: CALS export selected



### 9.3 Output Ventura Publisher - TI01 & TI02



TI01



TI02